Date: Sun, 22 Aug 93 04:30:21 PDT
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: Bulk
Subject: Ham-Homebrew Digest V93 #18
To: Ham-Homebrew

Ham-Homebrew Digest Sun, 22 Aug 93 Volume 93 : Issue 18

Today's Topics:

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

Date: Sat, 21 Aug 1993 19:56:03 GMT
From: tarpit!bilver!vicstoy!kc4zvw@uunet.uu.net
Subject: Julieboard part sources
To: ham-homebrew@ucsd.edu

In an article of 73 mag (August), there is a project for a DDS synthesizer.
The parts list includes a Harris HSP45102 and a CA3338AE. A previous
message mentioned Wyle Labs as a source for these items. Can anyone
post an address or telephone number for this or another supplier. Also
specify the minimum order limits of supplier if known.

// David //

Date: Sat, 21 Aug 1993 14:44:58 GMT
From: news.service.uci.edu!ucivax!news.claremont.edu!elroy.jpl.nasa.gov!swrinde!
gatech!wa4mei!ke4zv!gary@network.ucsd.edu
Subject: Need help with RF modem design

To: ham-homebrew@ucsd.edu

In article <254adb$9qd@usenet.INS.CWRU.Edu> dq528@cleveland.Freenet.Edu (Bret Berger) writes:
>
>I'm working on a data logger/radio telemetry design and struggling with
>the modem portion of the project. I'll be using an off the shelf UHF or
>VHF FM tranceiver. The uC is a 68HC11. The amount of data to be
>transmitted is low so 1200 baud FSK, ala ham TNC-2, modulation seems
>reasonable. My initial scheme is to use the same demodulation circuit
>as the TNC-2 clones; an XR2211. Modulation would be done in firmware,
>then low-pass filtered to generate 1200Hz/2200Hz. Design priorities
>are: 1) Low parts count, 2) Low power (source is solar panel/lead-acid
>battery), 3) No (or little) manual calibration (read: no pots), 4) Cost.
>
>Questions to anyone who cares to respond are:
>
>   *Does this seem like a reasonable approach? I'm commited to the
>HC11, but no other parts.
>
>   *Is FSK the optimal type of modulation here? Given the
>capabilities of the HC11 should I look at other modulation approaches
>which might require less supporting circuitry?
>
>   *Am I using the HC11 to full advantage? It will be lightly loaded
>with data collection tasks. Might the built-in A/D be used for
>demodulation?

Well what you're proposing isn't FSK, it's AFSK. You could just square up the audio and use a spare interupt line to *count* cycles with the microprocessor for decoding the two tones. However, you'll likely find it easiest to take the Kantronics Data Radio approach and really use true FSK with a data slicer on the discriminator output. Assuming you maintain a good link budget, this is simple and reliable. The WA4DSY tracking data detector would be a good circuit for receiving FSK from the radio discriminator. This will allow for up to 5 kHz frequency drift in the radios. Modulation would consist of TTL voltages through a resistive divider directly to the varactor modulators of the radios. Now this requires minor radio surgery, but it uses few parts and almost no uP cycles to implement.

>   *As I have no requirements for compatibility with other systems, I
>thought I'd pick and choose pieces of AX.25 for my packet protocol.
>Features on the prototype will be bare-bones but minimally include:
>error detection/re-transmission and packet "digipeating". This is the
>"How would you change AX.25?" question. Forward error correction?

>HDLC?

You don't need FEC unless your link budget is really marginal. A
small beam would be cheaper, simpler, and use less power. :-)

You do want to use HDLC and a scrambler, or at least Manchester encoding,
to keep the modulation symetrical. Long periods of mark are not a good
idea for FSK data systems. If you're bound to simplex half duplex, you
can do channel management with simple carrier squelch. You might want
to look at the old Vancouver protocol, it has only 8 bits of address
overhead.

>   *Book suggestions? Magazine article suggestions? Places to look
>for similar circuits or ("C") source code?

The KA9Q code has C source to implement AX25, and the ARRL publishes
the AX25 spec.

Gary

--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

Date: Sat, 21 Aug 1993 16:58:31 GMT
From: news.cerf.net!ent-img.com!wb6hqk!bart@network.ucsd.edu
Subject: Need help with RF modem design
To: ham-homebrew@ucsd.edu

In article <254adb$9qd@usenet.INS.CWRU.Edu> dq528@cleveland.Freenet.Edu (Bret
Berger) writes:
>
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>the modem portion of the project. I'll be using an off the shelf UHF or
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>battery), 3) No (or little) manual calibration (read: no pots), 4) Cost.
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>Questions to anyone who cares to respond are:
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>   *Does this seem like a reasonable approach? I'm commited to the
>HC11, but no other parts.

I would seriously consider a micropower TNC-2. They consume around 40 ma
and work! Hacking the existing code to include the telemetry front end
would be considerably easier than starting from scratch with the 'hc11.
Compatibility with AX-25 would be far more likely which could simplify testing.
In addition, you could make your design mods and firmware to the ham community
unless it's prohibited for business reasons.
>
>   *Is FSK the optimal type of modulation here? Given the
>capabilities of the HC11 should I look at other modulation approaches
>which might require less supporting circuitry?

Existing 1200 bps ax-25 systems generally use an Audio Frequency Shifted
subcarrier on FM modulated onto the RF carrier. The 9600 bps systems in
common amateur use are direct FM which has better noise performance but
often requires modifactions to the radios. At 1200 bps, IF passband width
is'nt likely to be a problem unless you want it optimized and direct FM
would be easier to implement with the 'hc11.
>
>   *Am I using the HC11 to full advantage? It will be lightly loaded
>with data collection tasks. Might the built-in A/D be used for
>demodulation?

The 'hc11 has sufficent A to D and processing bandwidth to implement the
entire modem but it's quite a lot of trouble unless you go to a coherent
modulation format that can benefit from the approach. The Texas Instruments
TCM3105 modem chip used in the micropower TNC's is far from optimal but
works, consumes just a few ma and requires minimal design and debugging
effort.
>
>   *Would it be overkill to use a switched-capacitor filter IC to

Yes, it's overkill. A simple passive filter is more than adequate. The
'3105 has a built in transmit bandlimiting filter.

>low-pass filter the digitally modulated output signal?   It seems a
>simple passive filter would leave too much energy in the harmonics.

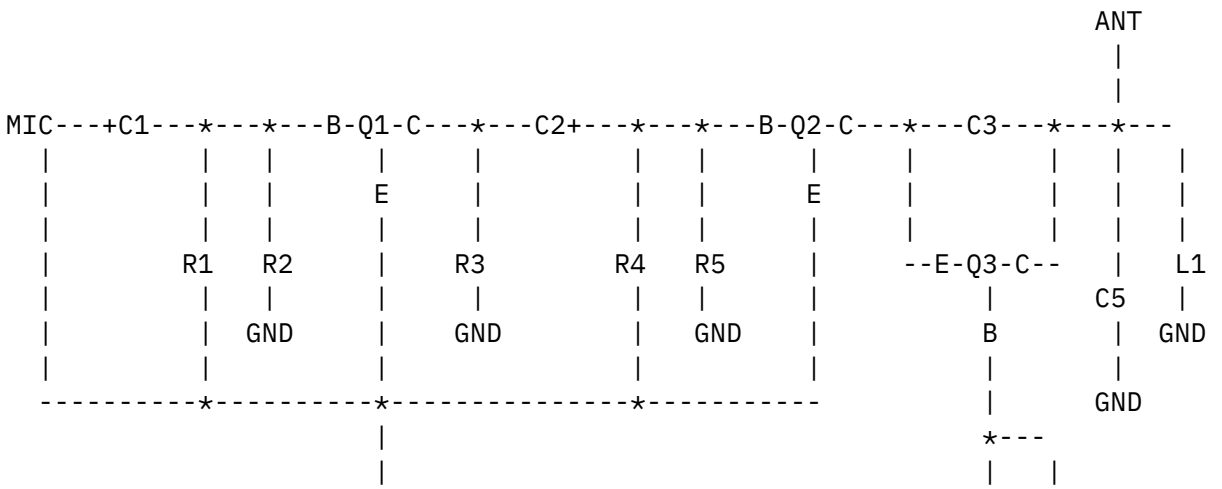
>
>   *As I have no requirements for compatibility with other systems, I
>thought I'd pick and choose pieces of AX.25 for my packet protocol.
>Features on the prototype will be bare-bones but minimally include:
>error detection/re-transmission and packet "digipeating". This is the
>"How would you change AX.25?" question. Forward error correction?
>HDLC?

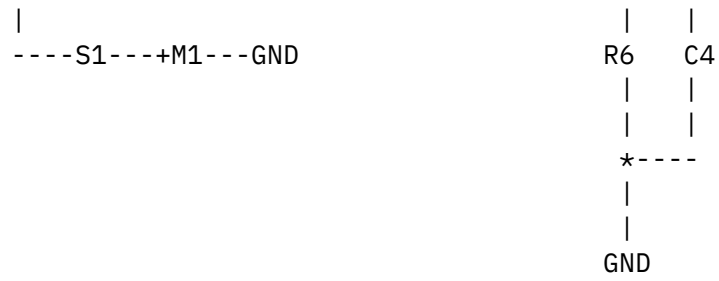
Date: Sat, 21 Aug 1993 00:59:00 GMT
From: news.Hawaii.Edu!news@ames.arpa
Subject: Project 4: 160 meter phone xmtr
To: ham-homebrew@ucsd.edu

Gang:
   Here's the next project: a 160M phone xmtr; sorry it's AM but these are OLD project books! Just the simplicity of it should make it fun to build and play with. It's VFO tuned by adjusting the slug of L1. In fact you can use this on 75 meters (and there IS some AM activity on 75) just by changing the final L/C network accordingly. Note that as various antennas are tried, the frequency will change markedly, necessitating readjustment of the L1 slug. The microphone should be a low-impedance crystal type.

Parts list

C1, C2   4 uF, 15 VDC electrolytic caps
C3   100 pF
C4   .015 uF
C5   180 pF
L1   Vari-loopstick (WRL 10M162 or equiv.)
M1   9 volt battery
Q1, Q2, Q3 GE-2 transistors
R1   10K resistor
R2   750K
R3, R4   5.1K
R5   200K
R6   75K
S1   SPST switch





Since the xmit frequency can change as you change antennas, I bet a strong wind blowing against a longwire antenna will cause a little `swing' in frequency...

This circuit was taken from Brown and Kneital's 101 EASY HAM RADIO PROJECTS.

Next up is a one-transistor 15M CW xmtr; stay tuned.

Jeff, NH6IL

Jeffrey Herman, University of Hawaii Mathematics, jherman@hawaii.edu

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Date: 20 Aug 93 17:10:13 EST
From: titan.ksc.nasa.gov!k4dii.ksc.nasa.gov!user@ames.arpa
Subject: Spanner wrench needed for recessed BNC connectors
To: ham-homebrew@ucsd.edu

In article <24g5ak$sak@bronze.lcs.mit.edu>, moisan@bronze.lcs.mit.edu (David Moisan) wrote:
> I've volunteered (once again) to fix my friend's HT, a Yaesu 727. Like
> most (if not all) HT's, this one has a recessed BNC connector with a
> retaining ring that needs to be unscrewed before I can take the cover off.
> I need a spanner wrench to do this right, and I haven't found one.

Dave-

I would second the suggestion that Edmund Scientific might be a good source for spanner wrenches.

On the other hand, you may be able to make your own. If you happen to be near a hardware store, take a look at the tool provided with the service kits for Delta and Peerless faucets. They have the equivalent of a spanner wrench combined with an allen wrench at the other end, and it is usually surplus after the kit has been installed.

Perhaps you could modify one of these tools for a shorter span. Or,

perhaps you will see an easy way to make one, once you've seen them. For example, an old table fork could have the center tines removed, and the ends of the two outer tines could be bent at right angles, and filed to fit the slots in the BNC retainer ring.

Good luck.

73, Fred, K4DII

Date: 20 Aug 1993 19:59:38 GMT
From: news.larc.nasa.gov!grissom.larc.nasa.gov!kludge@uunet.uu.net
To: ham-homebrew@ucsd.edu

References <24s7as$6gm@usenet.INS.CWRU.Edu>, <24ta97INNe2k@rave.larc.nasa.gov>, <1993Aug20.155530.12008@uhura.neoucom.edu>a
Subject : Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

In article <1993Aug20.155530.12008@uhura.neoucom.edu> wtm@uhura.neoucom.edu (Bill Mayhew) writes:
>...or how about those flat-pack tubes that were popular in the late
>1950s and early 1960s. Somewhre in my basement, I have an old
>Motorola "portable" radio that is on lowband FM that has about 20
>or 30 of those little tubes in it. They aren't much bigger than an
>NE-2H lamp and have five or so wire leads sticking in a row out of
>the bottom of the envelope. It's been years, but it seems they had
>CKxxx designations for part numbers. Plate voltage was around 90
>volts or so, give that the unit used a 90 volt B battery. I think
>the fillment is 1.5 volts.

These are subminis. If anyone has any spare 5899s around, I'd appreciate hearing from them.
--scott
--
"C'est un Nagra. C'est suisse, et tres, tres precis."

Date: (null)
From: (null)
bart@wb6hqk.ent-img.com

End of Ham-Homebrew Digest V93 #18
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